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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re PATENT application of:

Applicant(s): Lucassen et al.

Serial No.: 09/453,480

Filing Date: December 9, 1999

Title: CUSHIONING CONVERSION MACHINE WITH MULTI-PATH PAPER
THREADING AND CUTTING BLADE SHUTTER

Examiner: Eugene Kim

Art Unit: 3721

Confirmation No. 2696

Docket No. RANPP0305USA

Customer No. 23908

APPEAL BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TECHNOLOGY CENTER

Dear Sir:

The undersigned hereby submits this brief in triplicate for the Board's consideration in connection with the appeal of the Examiner's decision, mailed April 25, 2003, finally rejecting claims 4, 6, 7, 11 and 13-15 of the above-identified application.

I. Real Party in Interest

The real party in interest in the present appeal is the assignee, Ranpak Corp.

II. Related Appeals and Interferences

Neither appellants, appellants' legal representatives nor the assignee of the present application are aware of any appeals or interferences which will directly affect, which will be directly affected by, or which will have a bearing on the Board's decision in this appeal.

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III. Status of Claims

Claims 4, 6, 7, 11 and 13-15 are pending, stand finally rejected and are the subject of this appeal. A correct copy of these claims is attached as Appendix A.

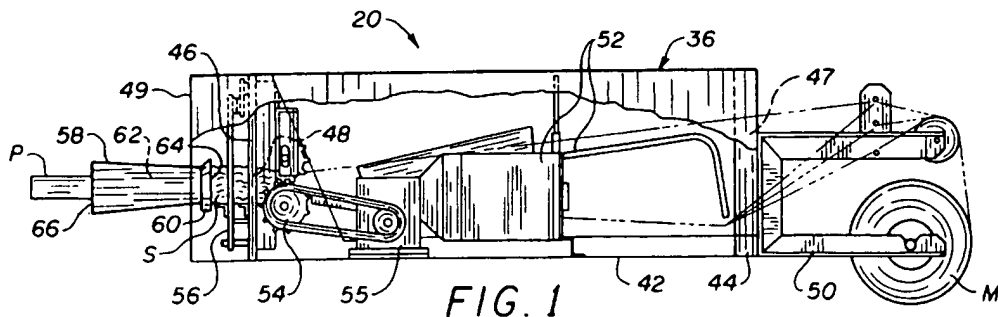
IV. Status of Amendments

There are no outstanding amendments.

V. Background

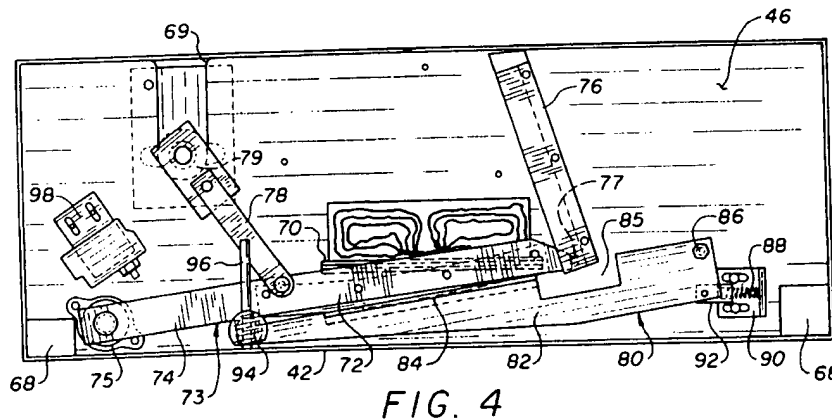
In the process of shipping an item from one location to another, protective packaging material is often placed in the shipping container to fill any voids and/or to cushion the item during the shipping process. Paper is biodegradable, recyclable and composed of a renewable resource, making it an environmentally responsible choice for conscientious shippers. While paper in sheet form could possibly be used as a protective packaging material, it is usually preferable to convert the sheets of paper into a relatively low density pad-like cushioning or dunnage product.

This conversion may be accomplished by a cushioning conversion machine, such as that disclosed in commonly assigned U.S. Patent No. 5,569,146 to Simmons. The conversion machine 20 disclosed in Simmons converts sheet-like stock material, such as paper in multi-ply form, into relatively low density pads. Specifically, the machine 20 has conversion assemblies 52, 55 that convert this stock material into a continuous unconnected strip having lateral pillow-like portions separated by a thin central band. The strip is then cut to form discrete dunnage products of pads.



A problem that arises from time-to-time in cushioning conversion machines of this type are jams in the region of the severing assembly. The cutting assembly 56 shown in Simmons's FIG. 4, for example, includes a moving blade 72 that travels between a retracted rest position and an extended full cut position. More specifically, a cutting cycle of the blade includes a cutting stroke during which the formed strip of dunnage is cut (Simmons, FIG. 4) and a return stroke during which the blade returns to the rest position. During the cutting stroke, the moving blade unit 73 travels across the dunnage outlet opening 48 and cuts the dunnage strip into a cut section, or pad, of a desired length. (See, for example, Simmons, col. 5, line 60 through col. 6, line 35.)

When the moving blade 72 moves to its extended position at the end of a cut, the leading cut end could move behind the cutting blade. Such movement of the cut end of the dunnage strip can occur due to the nature of a strip of dunnage, e.g., from relaxation of the crumpled strip along its longitudinal axis. (See specification, p. 11, line 23 through p. 12, line 7.) As you can see, the potential for the end of the strip to move above and behind the cutting blade is evident in Simmons's FIG. 4, reproduced below.

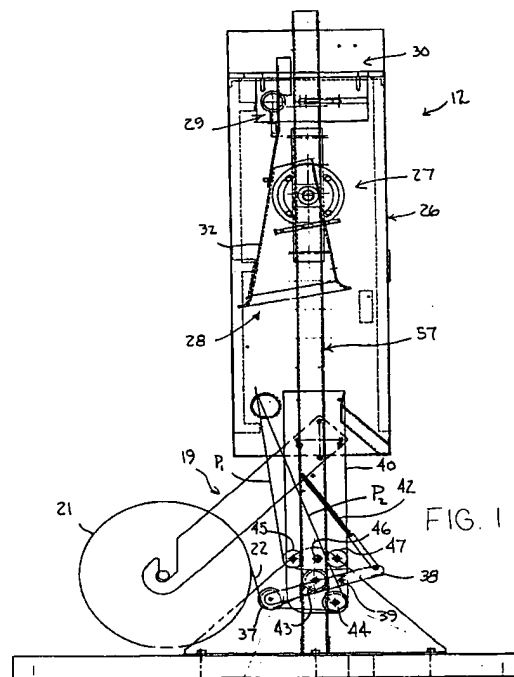


Although this cutting assembly is adequate to perform the cutting function, in certain situations the cut end of the continuous dunnage strip remaining in the cushioning conversion machine may interfere with the return stroke of the moving blade. If this interference is severe, the movement of the blade or subsequent feeding of the dunnage strip may be adversely affected to a point that a machine jam occurs. Although serious jams may be rare, they can result in mechanical damage. (See generally specification, pages 1-3.)

VI. Summary of Invention Defined in the Claims on Appeal

The invention defined by the claims on appeal enables better control over the dunnage product during a cutting operation to minimize the chance of a machine jam.

As shown in FIG. 1, the conversion machine 12 provided by the present invention has a stock supply with a roll 21 of sheet stock material 22. The stock material 22 preferably consists of one or more, typically two or three, superimposed plies of biodegradable, recyclable and reusable sheet material, such as kraft paper rolled onto a hollow cylindrical tube.



The machine 12 also includes a conversion assembly 27 which draws the stock material 22 from the stock supply and converts the stock material into a strip of cushioning. The conversion assembly includes a forming assembly 28 that causes inward folding of the lateral edges of the sheet stock material 22 to form a continuous strip having lateral pillow portions and a central band portion. The feed/connecting assembly 29, which in the illustrated embodiment includes a pair of cooperating gear-like members 53, pulls the stock material 22 downstream through the machine and also connects the layers along the central band, as by coining or perforating, to form a connected strip. As the connected strip travels downstream from the feed assembly 29, the severing assembly 30 cuts the strips into pads of a desired length. (See generally, specification pp. 5-7.)

Details of the severing assembly 30 are shown in FIGS. 4 and 5 where the components of the severing assembly are illustrated isolated from the rest of the machine 12. The severing assembly 30 includes a stationary blade 70 and a moving blade 72, both of which are strategically positioned relative to the dunnage outlet opening 65. The blades 70 and 72 are the actual "cutting" elements of the severing assembly and coact in a scissor-like fashion to cut the dunnage strip into cut sections, or pads. The stationary blade 70 is fixedly mounted on the frame end plate 63 in such a manner that it is aligned with one side of the dunnage outlet opening 65, which for ease of description will be referred to as the bottom side of the outlet opening. The moving blade 72 is part of a moving blade unit 73 which includes a blade support member 74 on which the moving blade 72 is mounted. One end of the blade support member 74 is pivotally attached to the end plate 63 by, for example, a bearing block 75.

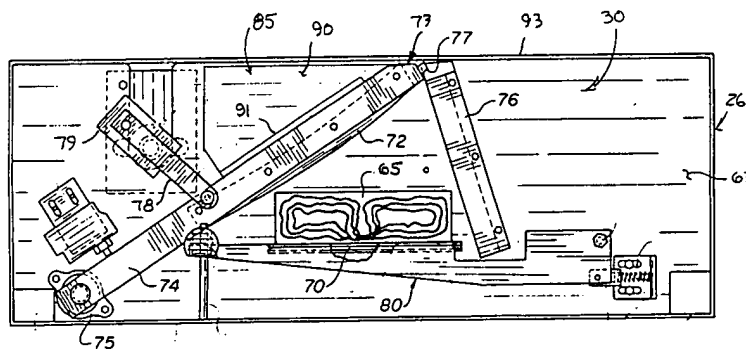


FIG. 4

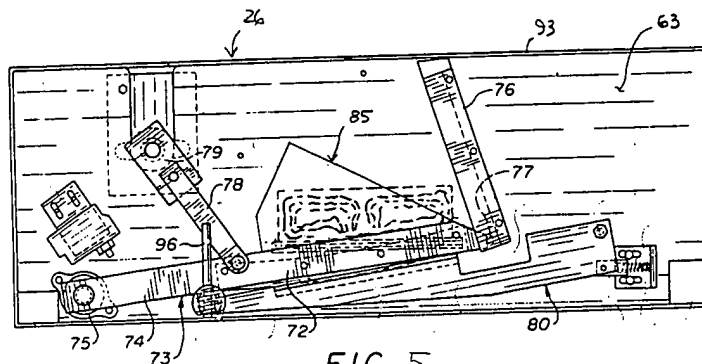


FIG. 5

The other or distal end of the blade support member 74 is slidably mounted on the end plate 63 within a slanted guide track 76. As is best seen by comparing FIGS. 4 and 5, this distal end of the blade support member 74 travels back-and-forth within the guide track 76 during a cutting cycle. (Specification, p. 10, line 22 through p.11, line 9.)

In accordance with the present invention and as illustrated in FIGS. 4-7, the moving blade has associated therewith a shutter 85. The shutter 85 moves with but trails behind the moving blade 72. The shutter cooperates with the moving blade to prevent the leading cut end of the continuous dunnage strip from moving "behind" the moving blade as the moving blade completes its cutting stroke, i.e., moves to its extended position shown in FIGS. 5 and 7. As seen in FIG. 5, when the cutting blade when is in its extended full-cut position it is almost clear of the outlet opening. Heretofore, this allowed the cut end of the continuous dunnage strip 88 to sometimes move behind the moving blade after it has passed by and then interfere with the return stroke of the moving blade. Such movement of the cut end of the dunnage strip may arise from relaxation of the dunnage strip 88 particularly along the longitudinal axis of the dunnage strip. The shutter blocks such movement of the cut end behind the dunnage strip, thereby permitting unrestricted return movement of the moving blade to its rest position. (Specification, p.11, line 23 through p. 12, line 7.)

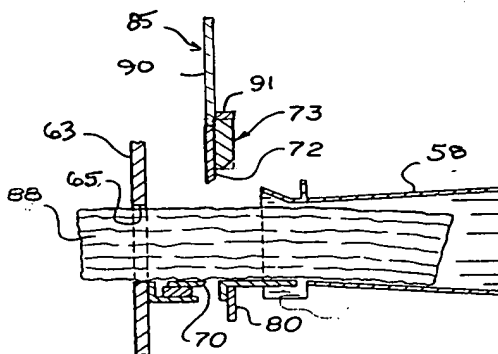


FIG. 6

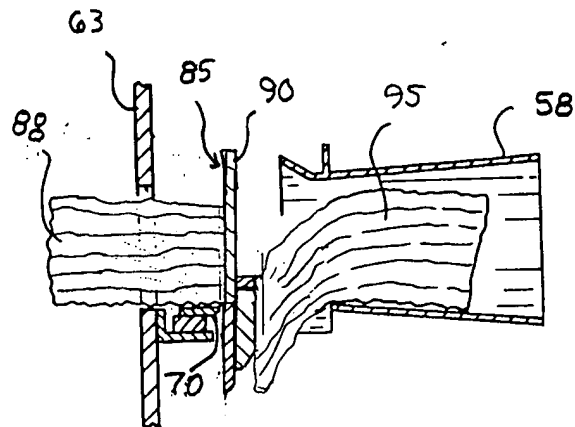


FIG. 7

In the illustrated embodiment, the shutter 85 includes a shutter plate 90 that is attached at a mounting bar 91 to the back edge of the blade support member 74 by any suitable fastening means. The shutter plate is generally triangular in shape so as to fit within the envelope defined by the retracted position of the moving blade 72, the rest position of the crank 79 and link 78, and the top wall 93 of the housing 26. The shutter is also of sufficient size to substantially span the outlet opening when the moving blade is in its extended position, thereby preventing any movement of the cut end of the continuous dunnage strip behind the moving blade. As best seen in FIGS. 6 and 7, the shutter has an upstream side surface substantially flush with the upstream side surface of the moving blade. Preferably, the front edge of the shutter plates abuts the back edge of the moving blade to form an essentially continuous smooth surface against which the cut edge of the dunnage strip can easily slide as the cutting blade moves past it in either direction. (Specification, p. 12, lines 8-24.)

VII. Applied Prior Art

U.S. Patent No. 5,569,146 to Simmons ("Simmons")

U.S. Patent No. 5,213,867 to Huston, Sr. et al. ("Huston")

U.S. Patent No. 5,943,844 to Wilhelm et al. ("Wilhelm")

VIII. Issue

Whether claims 4, 6, 7, 11 and 13-15 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Simmons in view of either Huston or Wilhelm.

IX. Grouping of Claims

Claims 6, 7 and 13-15 stand or fall with claim 4.

Claim 11 does not stand or fall with any other claim.

X. Argument

The central issue on appeal is whether the Examiner has established a *prima facie* case of obviousness. It is respectfully submitted that the Examiner has not. No suggestion or motivation has been found to modify Simmons or combine Simmons with Huston or Wilhelm to derive the claimed machine or method.

Primary Reference – Simmons

Simmons addresses a problem associated with misalignment of the trailing end of a cut pad. Simmons discloses a cushioning conversion machine 20 with a cutting/aligning assembly 56 with an automatic alignment device 80 that automatically "re-aligns" the cut section with the outlet opening 48 and a post-cutting constraining assembly 58 during the return stroke of a moving blade unit 73 when the moving blade moves from an extended position (see Simmons, FIG. 4) to a rest position (see Simmons, FIG. 3). The alignment device thus seeks to provide a smooth transition for the cut section from the outlet opening through the post-cutting constraining assembly.

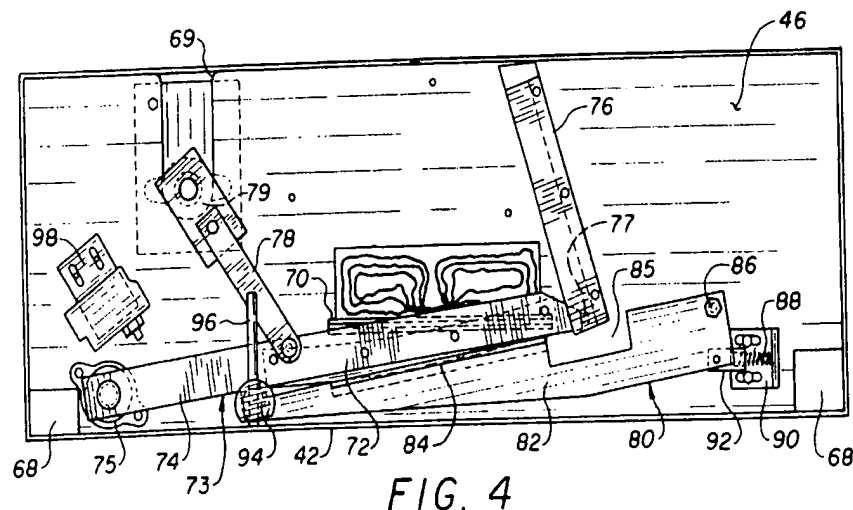


FIG. 4

Simmons, however, fails to disclose the claimed shutter. The Examiner has taken the position that it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Simmons in view of either Huston or Wilhelm to provide Simmons with a shutter and thereby derive the claimed invention.

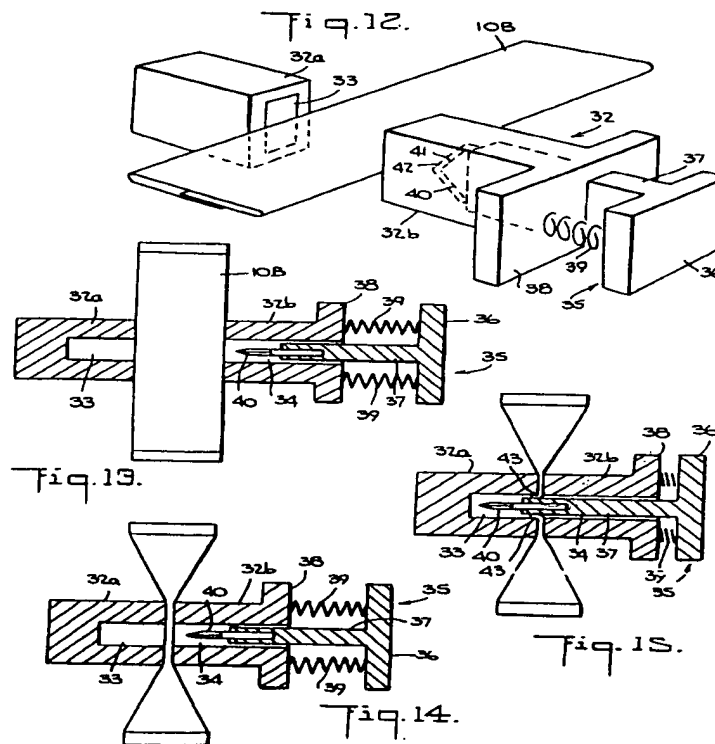
Simmons + Huston

Specifically, the Examiner has taken the position that it would have been obvious to provide Simmons with cutting means as taught by Huston . . . to make sure nothing interferes with the cutting blade. Regarding the shutter surface being flush with the blade, Huston [shows] a mechanical equivalent blade wherein the strip path is substantially blocked as claimed.

In the statement quoted above, the only alleged motivation or suggestion is "to make sure nothing interferes with the cutting blade." In response to arguments that this would not have motivated a person of ordinary skill in the art to make the proposed modification, the Examiner maintained this position in a subsequent Advisory Action. "Regarding the motivation, reference Huston is blocking the path as claimed." Paper No. 18.

Whether Huston blocks the path of the stock material has not been in dispute. The issue is: why would a person of ordinary skill in the art be motivated to modify Simmons, which appears to perform as intended? The Examiner has not provided an adequate answer.

Huston discloses a device that is completely different from Simmons's cushioning conversion machine. Huston discloses a forming tool 32 that cuts and crimps a flat tube 10B as part of a process of forming tetrahedra for use as a loose-fill packing material. The forming tool 32 includes a pair of opposed heads 32a/32b that clamp the tube therebetween, and a knife 40 carried by an end of a plunger shaft 37 within the head 32b. The plunger extends the knife into an aligned passage in the head 32a to cut the flat tube.



Huston's knife 40 and plunger shaft 37 form a continuous surface that would prevent severed stock material from interfering with the return stroke of the knife, and no teaching or suggestion has been found that this continuous surface was provided to prevent problems with the return stroke. No teaching or suggestion has been found that interference with the return stroke is a problem, except in the present application.

Moreover, the cut ends of the flat tube 10B are clamped on both sides of the knife 40 by opposed heads 32a/32b and, unlike the crumpled strip of dunnage described in the present application, there is no reason to believe that the cut ends of the flat tube longitudinally relax and extend beyond the positions they are in when cut. Thus, even if Huston's knife and plunger shaft permitted interference with the return stroke, interference from the cut ends of the flat tube would not be a problem for Huston. Therefore, a person of ordinary skill in the art would not apply the teachings of Huston to Simmons to address this problem.

For similar reasons, the method of claim 11 is neither disclosed nor suggested by Huston. Claim 11 positively recites blocking the strip path to prevent movement of a cut end of the strip from moving behind the moving blade. Huston neither discloses nor suggest that blocking the path of the stock material is desirable, thus there is no reason why a person of ordinary skill in the art would modify Simmons in the proposed manner in view of Huston.

Besides, unlike the claimed shutter and moving blade, neither the shaft 37 nor the heads 32a/32b of the forming tool 32 disclosed in Huston provide a surface that is flush with the surface of the knife 40 that blocks the path of the flat tube. Consequently, even if a person of ordinary skill in the art combined the teachings of Simmons and Huston, the claimed invention would not result.

Simmons + Wilhelm

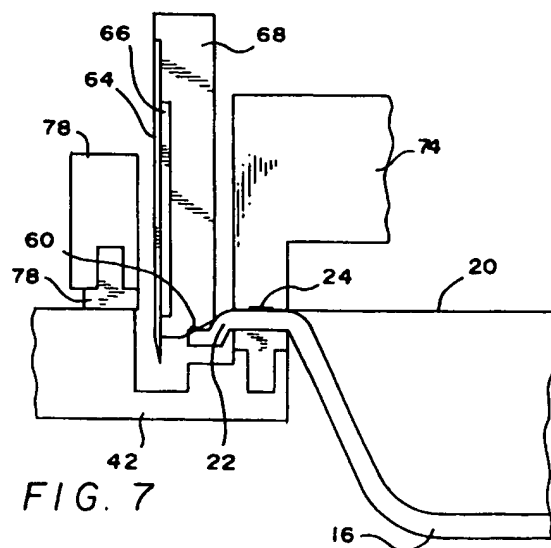
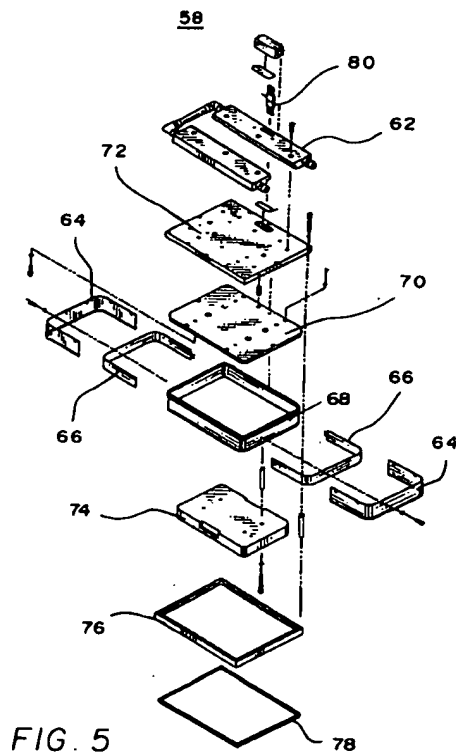
With regard to Wilhelm, the Examiner has taken the position that Wilhelm shows:
a cutting blade 64 wherein the whole surface is being used to substantially block a path as claimed. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Simmons with the cutting means as taught by . . . Wilhelm to make sure nothing interferes with the cutting blade. . . .
Furthermore, the blade means of [Wilhelm] performs the same function as applicant's blade and shutter and an integral workpiece is more efficient than having two separate workpieces as claimed.

Paper No. 16, p. 2. Again, the Examiner's motivation for the combination is to prevent interference with the cutting blade.

In the subsequent Advisory Action the Examiner took the position that the structure disclosed in Wilhelm, specifically the flush surface of the blade that extends across the path of the stock material when the blade is extended, provides motivation for the combination. "Regarding the motivation, . . . Wilhelm shows a flush surface as claimed." Paper No. 18.

In contrast to the position taken by the Examiner regarding the efficiency of an integral blade and shutter, it is respectfully submitted that an integral shutter and knife blade are not necessarily more efficient. Blades need to be sharpened periodically and so must be removed or replaced. Thus, if every blade included extra material to form a shutter, the cost to operate the machine could be higher.

Wilhelm discloses a machine for packaging food by applying a film sheet to a preformed food tray. Wilhelm heat seals the film sheet to the tray and then cuts the film with a knife that has a shape that corresponds to the perimeter of the tray. Like Huston, Wilhelm clamps the film sheet 20 with inner and outer clamps 74 and 78 that lie on respective sides of the knife 64. The inner clamp heat seals the film sheet to the tray 16 and the knife 64 cuts the film sheet 20 between the clamps. Wilhelm uses heat to shrink the edges of the cut film away from the knife 64. (See Wilhelm, col. 4, line 56 through col 5, line 42.)



Like Huston, interference with the return stroke of a moving blade does not appear to be a problem addressed by Wilhelm. While the knife 64 does have a surface that extends past the path of the film sheet, that film sheet is clamped and cannot move to interfere with the knife. Moreover, Wilhelm uses heat to shrink the cut ends of the film sheet away from the knife. Thus no interference with the return stroke of the knife is possible, regardless of whether a portion of the knife blocks the path of the film. Moreover, Simmons discloses a paper cushioning product, and paper typically does not heat seal or shrink in the presence of a heated blade. Without some recognition of the problem that leads to the adoption of the claimed shutter, it is respectfully submitted that a person of ordinary skill in the art would not be motivated to make such a shutter for a cushioning conversion machine. Consequently, a person of ordinary skill in the art would not combine the teachings of Wilhelm with the teachings of Simmons to address the problem of interference with the return stroke of a moving blade.

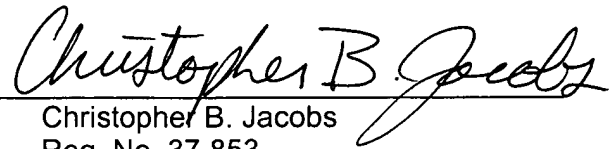
For similar reasons, the method of claim 11 is neither disclosed nor suggested by Wilhelm. Claim 11 positively recites blocking the strip path to prevent movement of a cut end of the strip from moving behind the moving blade. Wilhelm neither discloses nor suggests that blocking the path of the stock material is desirable, thus there is no reason why a person of ordinary skill in the art would modify Simmons based on the teachings of Wilhelm.

XI. Conclusion

In view of the foregoing, it is respectfully submitted that the claims are patentable over the applied art and that the final rejection should be reversed.

Respectfully submitted,

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Appendix A
Claims on Appeal

4. A cushioning conversion machine for converting sheet stock material into a cushioning dunnage product, comprising
- a stock supply assembly which supplies stock material to be converted,
 - a conversion assembly which draws the stock material from the stock supply and converts the stock material into a strip of cushioning, and
 - a severing assembly for severing the strip of cushioning to form a pad,
- the severing assembly including
- a moving blade mounted for movement across a strip path between a retracted position and an extended position for cutting the strip, and
 - a shutter movable with the moving blade for substantially blocking the strip path when the moving blade is in its extended position, wherein the shutter has an upstream surface flush with an upstream surface of the moving blade, and the upstream surface of the shutter is positioned to engage a downstream end of the strip when the moving blade is in its extended position.
6. A conversion machine as set forth in claim 4, wherein the shutter and moving blade are both mounted to a blade holder.
7. A conversion machine as set forth in claim 6, wherein the blade holder is mounted for swinging movement relative to another blade that coacts with the moving blade to cut the strip.
11. A conversion method for converting sheet stock material into a cushioning dunnage product, comprising drawing sheet stock material from a stock supply, converting the stock material into a strip of cushioning, and cutting the strip of cushioning using a moving blade to cut the strip of cushioning across a strip path between a retracted position and an extended position, wherein a shutter is moved in trailing relation to the moving blade wherein an upstream surface of the shutter is flush with an upstream surface of the moving blade and the upstream surface of the shutter smoothly slides along a downstream end of the strip of

cushioning and engages the downstream end of the strip when the moving blade is in its extended position, for substantially blocking the strip path when the moving blade is in its extended position, thereby to prevent movement of a cut end of the strip from moving behind the moving blade as the moving blade slices through the strip of cushioning.

13. A conversion machine as set forth in claim 4, wherein the moving blade and shutter are separate components having common movement.

14. A conversion machine as set forth in claim 4, further including a second blade with which the moving blade coacts to sever the strip of cushioning.

15. A conversion machine as set forth in claim 14, wherein the second blade is a stationary blade.